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Abstract

Whereas earlier research on tacit coordination has mainly demonstrated how people use environmental information to achieve coordination success, the present research investigates how people tacitly coordinate their decisions by using information about the people they have to coordinate with (i.e., social information). We demonstrate that when people have to tacitly match their decisions, they focus on the characteristics they share with one another to achieve coordination success (Study 1). By contrast, when mismatching is required, people focus on interpersonal differences as a basis for coordination (Study 2). Moreover, we show that social information only facilitates coordination when there is a clear association between such information and the available choice options (Study 3). Finally, in matching situations, people prefer co-players who are similar to themselves, whereas, in mismatching situations, people prefer dissimilar co-players (Study 4). These results provide converging evidence that social information can serve as an effective cue for tacit coordination.

Keywords

coordination games, salience, social information, tacit coordination

Often, our outcomes are not only determined by our own decisions but also by the decisions of others. For instance, if you want to drive home from work by taking a busy highway, your travel time not only depends on your own actions, but also on the number of other people who decide to take the same road at the same moment. Other examples of such interdependent situations range from small-scale interpersonal decisions, such as trying to meet a friend in a busy mall, to large-scale international conflicts, such as the former Cold War between the USA and the Soviet Union. These situations all have an element of coordination in them (Schelling, 1960; also see Camerer, 2003). However, matters are often complicated by the fact that communication between the different parties is limited or sometimes even impossible. Yet, even in the complete absence of communication, the different parties may very

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well be capable of coordinating their decisions successfully. But how are they able to do so?

Coordination without communication is generally referred to as *tacit coordination* (e.g., Abele & Stasser, 2008; Van Dijk, De Kwaadsteniet, & De Cremer, 2009). In his famous book *The Strategy of Conflict* (1960), the Nobel Prize-winning economist Thomas C. Schelling was the first to address this concept. He argued that people are often capable of tacitly coordinating their actions. To illustrate this phenomenon of tacit coordination, Schelling gave the example of two people who aim to meet each other in New York City without having a prior understanding on where to meet, and at what time they should meet. Where should they go, and at what time? When Schelling asked his research participants this question, most of them indicated that they would go to Grand Central Station, at 12.00 noon. If they indeed did act accordingly in such a situation, this would mean that they would be able to meet the other person, and that tacit coordination would thus be highly effective. Schelling presented his participants with numerous different *coordination games*. In all of these games, two players could earn an amount if they managed to both choose the same option (also referred to as *matching games*; Abele & Stasser, 2008; Bacharach & Bernasconi, 1997; Camerer, 2003), such as "write some positive number", "choose a color", etc. In most cases, people were highly capable of tacitly coordinating their decisions by both choosing the most salient option (e.g., most participants chose the number 1 when they had to write the same positive number; also see Mehta, Starmer, & Sugden, 1994). These simple matching games thus illustrate that people are often capable of effectively coordinating their decisions, even when communication is impossible, by basing their decisions on salient cues in the task environment (i.e., environmental information).

But how do people identify what is a salient cue for tacit coordination purposes? Earlier studies (e.g., Bacharach & Bernasconi, 1997; Mehta et al., 1994; Schelling, 1960) have consistently shown that if people have to choose the same option (also referred to as matching), they often decide to choose the one option that sticks out from the rest, such as Grand Central Station in Schelling's New York City example. In other words, in matching situations, people tend to choose the most salient or prominent option (Colman, 2006; Sugden & Zamarron, 2006). From this literature, one may be inclined to conclude that salience is only determined by the environmental characteristics of the coordination situation at hand (e.g., characteristics of the available choice options). What we draw attention to in the present article, however, is that such salience may not only be determined by environmental characteristics, but also by the characteristics of the people involved (i.e., social information; see also De Kwaadsteniet & Van Dijk, 2010).

In real-life coordination situations, people may not only have information about characteristics of the task itself, but also social information about the characteristics of the person(s) they have to coordinate with, such as their sex, age, education, etc. As we will argue and show, such *social information* may affect the salience of the available choice options and, consequently, the choice behavior that derives from such salience. In other words, we argue that social information may serve as an effective cue for tacit coordination. Surprisingly, however, the influence of social information on tacit coordination has remained largely uninvestigated. In the present article, we therefore examine when and how people may employ such information to achieve coordination success.

Social information as a cue for matching

How can people use social information to tacitly match their decisions? In other words, how can they employ information about another's sex, race or education as a cue for successful matching? We argue that the sharedness of such characteristics plays a key role here. That is, if a certain characteristic is shared among people, and they focus on this sharedness as a basis for their decisions, this may help them to achieve coordination success. This idea can be illustrated with a simple thought experiment. Imagine two psychology

students who want to study together for an exam but who cannot communicate with one another. Where should they go in order to meet? If they both focus on what they have in common with one another (i.e., that they are psychology students) and they use this sharedness as a basis for their decisions, they may indeed be able to meet. After all, in that case they may tacitly coordinate by meeting at the library of the psychology department. Likewise, if two law students want to study together, they may tacitly coordinate by going to the library of the law faculty. This simple example illustrates that when people base their matching decision on the choice option that is associated with their shared characteristic, this may indeed lead to successful tacit coordination.

But what should people do when they have to match their decisions and they cannot use the above strategy to achieve successful matching because the relevant characteristic is unshared? How do they then identify the most appropriate choice to make? For instance, what if a psychology student and a law student were to face the tacit coordination problem about where to study? If each student were then to go to their own library, they would certainly not be able to meet. In the case of unshared characteristics, people should thus adopt an alternative strategy to match their decisions. In that case, they should go for the most appropriate "neutral" option. More specifically, instead of going to their own libraries, the psychology and law student should then go to the most appropriate neutral location, in this case the Central University library. However, it should be noted that this strategy only yields an unambiguous solution, and thus leads to successful coordination, if there is one such neutral option. Thus, knowledge about which characteristics are unshared—by indicating which choice options should be avoided—can also be used to match decisions. Although the above reasoning seems highly plausible, previous research on tacit coordination has overlooked the potential role of social information as a cue for tacit coordination. Therefore, the first aim of the present article is to investigate whether people actually employ the above-described strategies to tacitly match their decisions (Study 1: Social information in matching games).

Social information as a cue for mismatching

Note that the above reasoning is limited to situations in which people are required to match their choices. Likewise, the bulk of earlier research on tacit coordination—including Schelling's own work—has mainly focused on matching situations (see e.g., Bacharach & Bernasconi, 1997; Crawford, Gneezy, & Rottenstreich, 2008; Mehta et al., 1994). In many real-life coordination situations, however, it is not required that people match their decisions, but that they mismatch their choices (Abele & Stasser, 2008; Arthur, 1994; Heath, Ho, & Berger, 2006). Such a mismatching requirement can be illustrated with the example about the commuter who does not want to get stuck in heavy traffic while driving home from work. In this example, the commuter wants to mismatch the choices of his/her fellow commuters. After all, he/she would not want to travel at the time when most commuters decide to go home. Another smaller-scale example of a mismatching situation occurs when you are invited to a birthday party and you have to decide which present to buy. In that case, you may want to avoid buying the same present as the other guests. Although mismatching situations occur quite frequently in everyday life (for more real-life examples, see Abele & Stasser, 2008), very little is known about how people coordinate their decisions in such situations. Mismatching situations are psychologically different from matching situations. After all, in contrast to matching situations, in mismatching situations it is not sufficient to identify one choice option that is unambiguously salient for everyone.

Thus, the second question that we address in this article is: Can people use social information to achieve coordination success in mismatching situations? Our suggestion is that they can, but not by focusing on the sharedness of one another's characteristics. Instead, when mismatching is

required, we argue that the *un*sharedness of characteristics may be instrumental to achieving successful tacit coordination. That is, when people know that they are different from one another, they may focus on this unsharedness as a means to successfully mismatch their choices. More specifically, they may try to achieve successful mismatching by focusing on their differences as a basis for coordination. Again, consider the library example: When the psychology student and the law student know that they both have to study for an exam but they want to study separately (for instance, because they realize that they would only distract one another if they try to study together), instead of going to the Central University library, they may each decide to go to the library of their own faculty. If both were to use this strategy, tacit coordination would be successful. Thus, focusing on unsharedness as a basis for coordination may indeed be a highly effective strategy in mismatching situations. The second aim of this article is to investigate whether people actually employ this strategy in mismatching situations (Study 2: Social information in mismatching games).

The association between social information and the available choice options

Above, we illustrated how social information can make certain choice options salient, thereby facilitating tacit coordination (i.e., matching as well as mismatching). It should be noted, however, that social information does not always constitute an effective cue for tacit coordination. After all, such information can only facilitate coordination when there is a clear association between the kind of social information people have (e.g., information about the study of the other person) and the options they can choose from (e.g., locations that are suitable for studying, such as libraries).

In some coordination situations, this association between social information and the available choice options may not be so clear-cut. For instance, if you want to meet another person somewhere in New York City (see Schelling, 1960), it may not help you much to know that this person is a woman. Moreover, in reality, you may often have several different pieces of information about the other person. For instance, you may not only know that the other person is a woman, but also that she studies psychology. If you are required to coordinate decisions with this person, you may not necessarily use all these pieces of social information to reach a decision. Instead, you may only use those pieces of information that—by being associated with the available choice options—can give you clear cues about which decision to make. If, for instance, you are required to meet another student at a University building and you know that this student is a woman who studies psychology, the fact that she studies psychology seems a more relevant cue as to where you should go than the fact that she is a woman. In such instances, we hypothesize that people will only focus on those characteristics that are associated with the available choice options while ignoring the characteristics that appear irrelevant. This association between social information and the available choice options and its importance for the tacit coordination process is the third issue we address in the present article (Study 3: The association between social information and the choice options).

Choosing coordination partners

Above, we have concentrated on the (in)effectiveness of tacit coordination, with the common theme being that social information, in combination with the requirements for coordination success (i.e., matching or mismatching), may determine which options people choose in coordination situations. Our line of reasoning is based on the idea that people will try to choose those options that, given the information they have about their co-players and the coordination requirements, increase their chances of success. In a similar vein, one could argue that if decisions are indeed based on such expectancies of success, people may also select coordination partners in

such a way that their chances of success are maximized. That is, when faced with a matching task, people might prefer partners who are similar to themselves, whereas in a mismatching task they might prefer partners who are different. Interestingly, this issue of partner selection has not yet been addressed in the research on tacit coordination. Therefore, this is the fourth issue we address in the current article (Study 4: Preferences for similar versus different co-players).

Overview

We investigate all of the issues described above in a series of four experimental studies. In Study 1, we focus on matching situations. We investigate whether people use the sharedness (rather than unsharedness) of individual characteristics as a cue to tacitly match their decisions. In Study 2, we focus on mismatching situations, and we test whether people use the unsharedness (rather than sharedness) of individual characteristics as a cue for mismatching. Furthermore, in Study 3, we investigate the boundary conditions of these effects by testing our idea that social information only serves as an effective cue for tacit coordination when there is a clear association between such information and the available choice options. Finally, in Study 4, we address the issue of how people choose their coordination partners. By doing so, we can test whether people have a preference for similar others when matching is required, and whether they have a preference for dissimilar others when mismatching is required.

Study 1

Study 1 addresses our first question, i.e., whether people use social information as a cue for tacit matching. We test this idea using a Schelling-type matching game in which two players are required to choose the same option without being able to communicate with one another (cf. Schelling, 1960). Based on our reasoning, we formulate the following two hypotheses. First, we expect that when a certain characteristic is shared among players of a matching game, they will most often choose the option that is associated with this characteristic (Hypothesis 1). Second, we expect that when players have different individual characteristics, they will most often avoid the options that are associated with either one of these characteristics, and choose a neutral option instead (Hypothesis 2).

Method

Participants Participants were 97 students at Leiden University (37 men and 60 women, *M* age = 21.42 years) who participated voluntarily in the study.

Procedure The participants were invited to participate in a study on "decision making". Upon arrival at the laboratory they were seated in separate cubicles, each containing a personal computer. This computer was used to give instructions to the participants and to register the dependent measures.

Once seated, we presented participants with a Schelling-type matching game. In this game, participants were presented with three colors, i.e., blue, pink and yellow, and they were asked to each pick one of these three colors. These three colors were chosen because, in Western culture (see e.g., Brabandt & Mooney, 1989; Zucker & Bradley, 1995), the color blue is generally associated with the male sex, pink is associated with the female sex, and yellow is generally perceived as a gender-neutral color. Participants were told that if they succeeded in both picking the same color, they would have a chance of winning a monetary amount of € 20.

Participants were randomly assigned to three experimental conditions (Social Information: Shared Characteristic vs. Unshared Characteristic vs. Control). In the Shared and the Unshared Characteristic conditions, participants received bogus information about the first name of their co-player. The name Johan was used to indicate a male co-player whereas the name Johanna was used to indicate a female co-player. Both of these

Table 1. Study 1: matching: number of choices for sex-typical, sex-neutral and sex-atypical colors in the three experimental conditions

Conditions	Choices		
	Sex-typical color	Sex-neutral color	Sex-atypical color
Shared sex (n = 32)	18	7	7
Unshared sex (n = 32	2	23	7
Control condition (n = 33)	6	21	6

names are quite common in The Netherlands, the former one being unambiguously male and the latter one being unambiguously female. Thus, although we did not explicitly tell them whether their co-player was male or female, participants could infer their co-player's sex from his/her first name. Additionally, participants were asked to fill in their own first name and they were told that this name would also be sent to their co-player. In the Shared Characteristic condition, the name of the co-player indicated that this co-player was of the same sex as they themselves. In the Unshared Characteristic condition, the name of the co-player indicated that this co-player was of the opposite sex than they were; and in the Control condition no information was exchanged between the two players, so participants were unaware of the sex of their co-player. Note that this latter condition (i.e., the Control condition) closely resembles the procedure used in earlier experimental studies on matching games (cf. Abele & Stasser, 2008; Bacharach & Bernasconi, 1997; Mehta et al., 1994; Schelling, 1960).

At the end of the experimental session, which lasted about 20 minutes, all participants were debriefed, thanked and paid equally for their participation (i.e., each participant received € 3). Furthermore, three prizes of € 20 were randomly allotted among the participants. All participants agreed to this payment procedure.

Results

Manipulation check To check whether participants had understood the experimental manipulation, afterwards they were asked to indicate whether their co-player was a man, a woman or whether they had not received information that was indicative of the sex of their co-player. All participants answered this question correctly, which indicates that they had all understood and remembered the social information they had been given.

The participants' choices To test our hypotheses, we first recoded the participants' choices into three categories, namely into (a) sex-typical choices (i.e., pink for women and blue for men); (b) sex-atypical choices (i.e., blue for women and pink for men); and (c) sex-neutral choices (i.e., yellow).[1] The recoded choices of the participants are shown in Table 1. We first tested whether our manipulation had an effect on these choices. As expected, there was indeed a significant difference between the three conditions, χ^2 (4, N = 97) = 25.23, $p < .001$. As predicted by Hypothesis 1, participants in the Shared Characteristic condition chose their sex-typical color most frequently, namely 18 out of 32 times, χ^2 (2, N = 32) = 7.56, $p < .05$. As predicted by Hypothesis 2, in the Unshared Characteristic condition the sex-neutral option was chosen most frequently, namely 23 out of 32 times, χ^2 (2, N = 32) = 22.56, $p < .001$. And finally, in the Control condition the sex-neutral option was also chosen most frequently, namely 21 out of 33 times, χ^2 (2, N = 33) = 13.64, $p < .001$.

Discussion

The results of our first study support our hypotheses. Whereas in the Shared Characteristic condition participants most frequently chose their

sex-typical color (Hypothesis 1), in the Unshared Category Membership condition the sex-neutral option was chosen most frequently (Hypothesis 2). These results indicate that players indeed use social information as a cue to determine the most salient option in matching situations. Furthermore, these results show that the sharedness of characteristics plays a key role in this process. Only when a characteristic is shared, do the options that are associated with this characteristic become salient as a cue for matching. However, when players do not share characteristics, players will opt for more category-neutral choices instead (for other research showing that players coordinate on the neutral option, see Van Huyck, Gilette, & Batallio, 1992).

Furthermore, it may be interesting to note that in the Control condition, in which players did not have information about one another's sex, participants also chose the sex-neutral option most frequently. We believe that this might be due to the fact that this sex-neutral option was positioned in the middle (i.e., in between the other two colors), possibly making it a focal point for coordination (cf. Schelling, 1960). This also implies that participants in the Unshared condition may have chosen this option not because it was sex-neutral, but because of its spatial positioning. Related to this, it should be noted that, although the majority of participants clearly employed the social information, we cannot exclude the possibility that some participants may have framed the task differently (i.e., not in terms of sex-neutral versus sex-typical options). That is, some participants may have used other cues, such as the spatial positioning of the options, to determine their choices.

Study 2

In Study 2, we focus on mismatching situations, and we test whether people also use social information to achieve successful mismatching. Based on our reasoning, we can formulate the following hypotheses. First, we expect that when a characteristic is unshared among players, and they are required to mismatch their decisions, they will most often choose the option that is associated with their own characteristic (Hypothesis 3). Second, we expect that when players share the same characteristic or when characteristics are unknown, this will not help them to identify the option that they should choose to achieve successful mismatching. Prior studies on tacit coordination in social dilemmas (e.g., De Kwaadsteniet, Van Dijk, Wit, & De Cremer, 2006; De Kwaadsteniet, Van Dijk, Wit, De Cremer, & De Rooij, 2007; Van Dijk, De Kwaadsteniet, & De Cremer, 2009) have shown that when unambiguous cues for tacit coordination are lacking, this often leads to high variance in people's decisions. Therefore, we can expect that when characteristics are shared or unknown, this will lead to (relatively) high behavioral variance in mismatching games (Hypothesis 4).

Method

Participants Participants were 89 students at Leiden University (33 men and 56 women, *M* age = 20.62 years) who participated voluntarily in the study.

Procedure The experimental procedure of this second study was almost identical to the procedure of the first one. The only difference was that in Study 2 participants were told that if they succeeded in both picking a *different* color (i.e., they were asked to mismatch), they would have a chance of winning a monetary amount of € 20. Again, participants were randomly assigned to the three experimental conditions.

Results

Manipulation check To check whether participants had understood the experimental manipulation, afterwards they were asked to indicate if their co-player was a man, a woman or whether they had not received information that was indicative of the sex of their co-player. All participants answered this question correctly, which indicates that they had all understood and

Table 2. Study 2: mismatching: number of choices for sex-typical, sex-neutral and sex-atypical colors in the three experimental conditions

Conditions	Choices		
	Sex-typical color	Sex-neutral color	Sex-atypical color
Shared sex (n = 30)	8	10	12
Unshared sex (n = 30)	22	7	1
Control condition (n = 29)	11	10	8

remembered the social information they had been given.

The participants' choices To test our first two hypotheses, we again recoded the participants' choices into three categories, namely into (a) sex-typical choices; (b) sex-atypical choices; and (c) sex-neutral choices (see Table 2).[2] We first tested whether our manipulation had an effect on the participants' choices. As expected, there was a significant difference between the three conditions, $\chi^2 = (4, N = 89) = 17.29, p < .01$, indicating that our experimental manipulation indeed affected the choices of the participants. In keeping with Hypothesis 3, participants in the Unshared Characteristic condition chose their sex-typical color most frequently, namely 22 out of 30 times, χ^2 (2, N = 30) = 23.40, $p < .001$. By contrast, in line with Hypothesis 4, in the Shared Social Characteristic condition and in the Control condition, there was a lot of variance in participants' decisions and no option was chosen significantly more often than any other option (both χ^2 s < 1; both ps > .65). To summarize, these analyses show that our two hypotheses were supported by the data.

Additional analyses: matching versus mismatching Although the hypotheses we formulated pertained either to matching (Hypotheses 1 and 2) or to mismatching (Hypotheses 3 and 4), the reasoning presented in our theoretical introduction also implies that players' choices should be different depending on whether they are required to match or mismatch their decisions. In order to investigate this, we decided to combine the datasets of Studies 1 and 2, and to conduct a log linear analysis with Coordination Requirement (i.e., Matching versus Mismatching) as an additional factor. This analysis yielded a significant main effect of Social Information, χ^2 (2, N = 186) = 6.99, $p <$ .05, a significant main effect of Coordination Requirement, χ^2 (1, N = 186) = 11.45, $p < .001$, and a significant Social Information by Coordination Requirement interaction effect, $\chi^{2>}$ (2, N = 186) = 24.82, $p < .001$. The latter two effects indeed indicate that the different coordination requirements had a substantial impact on participants' choices, and that the effect of social information on these choices largely depended on the specific coordination requirements. Put differently, it clearly mattered if matching or mismatching was required.

Discussion

The results of Study 2 again support our hypotheses. Whereas in the Unshared Category Membership condition participants most frequently chose their sex-typical color (Hypothesis 3), there was high behavioral variance in the Shared Category Membership and in the Control condition (Hypothesis 4). Note that this high behavioral variance may imply that (a) participants had no idea which strategy to use and therefore chose randomly, or (b) that they came up with various different strategies to achieve successful mismatching. Irrespective of their underlying strategies, however, the high variance in these conditions corroborates our idea that there was no unambiguous cue for coordination. In contrast to when matching is required, this

second study thus clearly shows that the unsharedness of social categories plays a key role when mismatching is required. Only when social categories are unshared, are players able to follow an unambiguous strategy to achieve successful mismatching. These findings suggest that unsharedness indeed facilitates successful coordination in mismatching situations.

Study 3

The results of the two studies presented above corroborate our idea that social information can facilitate tacit coordination (i.e., matching as well as mismatching). However, as we have already argued in the introduction to this article, there are boundary conditions to the coordinating potential of social information. Social information only provides an unambiguous cue for tacit coordination when there is a clear association between such information and the available choice options. In our third study, we test this idea by again presenting participants with a Schelling-type matching game. However, this time we will give participants information about two individual characteristics of their co-player. Based on our reasoning, we expect that participants will only use social information that is instrumental to achieving coordination success (i.e., information that is associated with the available choice options), while ignoring social information that appears irrelevant. More specifically, we only expect participants' decisions to be influenced by social information that is associated with the available choice options (Hypothesis 5).

Method

Participants and design Participants were 90 students studying at the Faculty of Social Sciences at Leiden University (46 men and 44 women, *M* age = 20.22 years) who participated voluntarily in the study. A 2 (Sex: Shared vs. Unshared) × 2 (Faculty: Shared vs. Unshared) between-participants factorial design was used. The participants were paid € 3 for their participation.

Procedure The procedure used in this study was very similar to the one used in Study 1. Again, we presented participants with a Schelling-type matching game (cf. Schelling, 1960). This time, however, participants were not presented with three colors, but with three University buildings, i.e., the Social Sciences Faculty, the Law Faculty and the Central University Library.[3] They were asked to each pick one of these three buildings and they were told that if they succeeded in both picking the same building, they would have a chance of winning a monetary amount of € 20.

Participants were randomly assigned to four between-participants conditions. Whereas in Study 1 participants only received information about the sex of their co-player (i.e., Shared Sex vs. Unshared Sex), in the present study they also received information about the faculty at which their co-player studied (i.e., Shared Faculty vs. Unshared Faculty). In the Shared Faculty condition, participants were informed that their co-player studied at the same Faculty as they themselves (i.e., the Faculty of Social Sciences) and that their co-player also knew this. In the Unshared Faculty condition, participants were informed that their co-player studied at the Law Faculty and that their co-player also knew this. Thus, participants were explicitly told that both players had the same kind of information about the other player. In other words, they knew that this social information was common knowledge.

At the end of the experimental session, which lasted about 20 minutes, all participants were debriefed, thanked and paid equally for their participation (i.e., each participant received € 3). Furthermore, three prizes of € 20 were randomly allotted among the participants. All participants agreed to this payment procedure.

Results

Manipulation check To check whether participants had understood the experimental manipulations, afterwards they were asked to indicate whether their co-player was a man or a woman and at which Faculty their co-player

Table 3. Study 3: number of choices for own faculty, Central Library and other's faculty by sex (Shared vs. Unshared) and Faculty (Shared vs. Unshared)

Sex	Faculty	Choices		
		Own faculty	Central Library (neutral option)	Other's faculty
Shared	Shared	22	0	1
	Unshared	3	15	5
Unshared	Shared	20	1	1
	Unshared	3	16	3

studied. All participants answered these two questions correctly, which indicates that they had all understood and remembered the social information they had been given.

The participants' choices In line with Hypothesis 5, there was a significant effect of Faculty on the choices of the participants, χ^2 (2, N = 90) = 58.73, $p < .001$, but there was no significant effect of the Sex manipulation, χ^2 (2, N = 90) = 0.56, $p = .75$. These findings indicate that choices were influenced by information about the study of the co-player, but not by information about the sex of the co-player. Additionally, in line with the findings of Study 1, in the Shared Faculty condition, participants chose their own Faculty most frequently, namely 42 out of 45 times, χ^2 (2, N = 45) = 72.93, $p < .001$, whereas in the Unshared Faculty condition, the Central University Library (i.e., the neutral option) was chosen most frequently, namely 31 out of 45 times, χ^2 (2, N = 45) = 25.73, $p < .05$. This pattern was almost identical in both Sex conditions (see Table 3).

Discussion

The results of our third study illustrate our idea that social information influences decisions in coordination situations when there is a clear association between such information and the available choice options, and that irrelevant social information does not influence decisions (Hypothesis 5). Additionally, in this study we replicated the results of Study 1, this time using different social information and different choice labels. We again showed that, when a characteristic is shared among the players, the options that are associated with this characteristic are chosen most often, and when players do not share characteristics, they opt for more category-neutral choices instead.

Study 4

In the previous studies, we tested our ideas by investigating the options participants chose (i.e., colors in Studies 1 and 2 and University buildings in Study 3). In our reasoning about how people determine their choices, we made the assumption that they choose those options that (they think) will maximize their chances of coordination success. Note, however, that by doing so, we inevitably introduced some circularity in our reasoning that is in fact part of what tacit coordination is all about. Strictly speaking, there is no *a priori* way of defining what would be a successful option in tacit coordination settings; What is successful can only be derived from what most people choose. For example, in the case of the matching problem we used in Study 1: if male participants generally opt for blue when trying to coordinate with another male participant, it automatically follows that opting for blue is a successful strategy and opting for pink is not. But does this also imply that male participants opt for blue *because* they want to be successful in tacit coordination? We think that it does, and of course our findings that

male participants opted for a sex-neutral color (yellow) when trying to match their choices with a female participant do fit with this idea of success-driven choices. Nevertheless, because the success of a strategy can only be indirectly derived from observing choices, it may be worthwhile to complement these analyses with an alternative way to investigate the link between expected success and tacit coordination, namely by investigating preferences for coordination partners.

If people indeed try to maximize their chances of success, one would expect that—when given a choice between potential coordination partners—people select the partner that would maximize their chances of success. To investigate this, we relied on the findings we obtained in Studies 1–3. Here we observed that sharedness enhanced successful coordination in matching tasks, and unsharedness enhanced successful coordination in mismatching tasks. Now, if these findings were indeed the result of a deliberate process such that participants anticipated and incorporated the chances of success when making their decisions, one might expect that participants should also take these chances into account when deciding with whom they might prefer to play the coordination game. This reasoning leads to an alternative way to test our ideas, namely a procedure in which we ask participants what kind of co-player (e.g., a woman or a man) they would want to coordinate with, which is the procedure we use in Study 4. Besides providing an alternative test of our ideas, this procedure allows us to investigate whether people really understand how social information, by providing unambiguous cues for which option to choose, can facilitate coordination success. More specifically, with this procedure we can test whether people realize that sharedness can facilitate matching, whereas unsharedness can facilitate mismatching.

We formulate the following hypotheses. If people realize that sharedness can facilitate successful matching, they will prefer a co-player who is similar to themselves (Hypothesis 6). By contrast, if they realize that unsharedness can facilitate successful mismatching, they will prefer a co-player who is different from themselves (Hypothesis 7). And finally, in line with findings from Study 3, we expect that the two previous hypotheses only hold when there is a clear association between the co-players' characteristics and the available choice options (Hypothesis 8). Given the fact that we have shown in the previous studies that successful matching requires shared characteristics and that successful mismatching requires unshared characteristics, we expect that players will choose a potential co-player based only on relevant social information (i.e., social information that provides useful information regarding the available choice options) and will ignore information that has no association with the available choice options.

Method

Participants Participants were 104 students at Leiden University (30 men and 74 women, *M* age = 21.16 years) who participated voluntarily in the study.

Procedure The experimental procedure of this study was similar to the procedure of the first three studies. Again, participants were presented with a coordination game, this time a game in which two players were asked to choose a color. The colors they could choose from were pink and blue, pink being associated with the female sex and blue being associated with the male sex (Brabandt & Mooney, 1989; Zucker & Bradley, 1995). Participants were randomly assigned to two experimental conditions: a matching and a mismatching condition. In the matching condition, they were told that if they succeeded in both picking the same color, they would have a chance of winning a monetary amount of € 20. In the mismatching condition, by contrast, they were told that if they succeeded in both picking a different color, they would have a chance of winning a monetary amount of € 20.

All participants were told that, before the game started, they could indicate who they would want to play the game with. They could choose between two co-players: a fellow participant who was of the same sex as they themselves but who

Table 4. Study 4: preferences for similar vs. dissimilar co-players in matching vs. mismatching games

Coordination requirement	Preferences	
	Same-sex co-player (but different faculty)	Opposite-sex co-player (but same faculty)
Choose same color	39	12
Choose different color	5	48

studied at a different faculty, or a fellow participant who was of a different sex as they themselves but who studied at the same faculty. Thus, each of these two participants was similar to the participant on one characteristic and different on another. After participants had indicated which of these two persons they would want to play the game with, the experimental session was closed.

At the end of the experimental session, which lasted about 20 minutes, all participants were debriefed, thanked and paid equally for their participation (i.e., each participant received € 3). Furthermore, three prizes of € 20 were randomly allotted among the participants. All participants agreed to this payment procedure.

Results

Manipulation check To check whether participants had understood the experimental manipulation, afterwards they were asked to indicate what the coordination requirement of the game was: (a) to choose the same color as their co-player or (b) to choose a different color. All participants answered this question correctly, which indicates that they had all understood and remembered the coordination requirements.

Co-player selection There was a significant effect of the coordination requirement manipulation on the co-player preferences of the participants, χ^2 (1, N = 104) = 47.85, $p < .001$. In line with our hypotheses, in the matching condition most participants preferred a co-player who was of the same sex as they themselves, χ^2 (1, N = 51) = 14.29, $p < .001$, whereas in the mismatching condition most participants preferred a co-player who was of the opposite sex, χ^2 (1, N = 53) = 34.89, $p < .001$ (see Table 4).

Discussion

The findings of our fourth study corroborate our hypotheses. As expected, when matching was required people preferred co-players who were similar to themselves (Hypothesis 6), whereas when mismatching was required people preferred co-players who were different (Hypothesis 7), but only when the respective characteristics were associated with the available choice options (Hypothesis 8). These findings suggest that people indeed realize that social information can serve as an effective cue for tacit coordination. Participants' co-player preferences seemed to reflect the notion that whereas sharedness can facilitate matching, unsharedness can facilitate mismatching.

General discussion

The aim of the present article was to shed some light on the role of social information in tacit coordination. Whereas earlier research has primarily focused on how characteristics of the coordination task itself influence people's decisions (e.g., Bacharach & Bernasconi, 1997; Schelling, 1960), the present research provided a first step towards showing how social information may also play a role in this process. By investigating this, we presented a social-psychological perspective on the topic of tacit coordination.

In a series of four experiments, we showed that social information can influence people's decisions in coordination situations. As such, this

research is the first to demonstrate that social information may serve as an effective cue for tacit coordination. Furthermore, we showed that the way in which social information influences choice behavior largely depends on the coordination requirements. When matching is required, people use the sharedness of characteristics as a basis for their decisions, whereas when mismatching is required, people use the *un*sharedness of characteristics to guide their choices. Additionally, we argued and showed that social information only influences decisions when there is a clear association between such information and the available choice options, and that people ignore irrelevant social information when they determine their choices. We obtained support for this reasoning by not only focusing on participants' actual choice behavior in coordination games (see Studies 1–3), but also on their preferences for potential co-players (see Study 4). In the following, we will discuss the general implications of these findings.

Social information and salience

As we mentioned in the introduction of this article, Schelling (1960) argued that people use salience to determine their choices in coordination games, and he demonstrated that people often choose the option that "sticks out" from the rest. The present research now shows that such salience is not only determined by features of the choice options themselves (i.e., environmental characteristics), but also by the information that people have about another's characteristics (i.e., social information). These findings not only show that people use social cues in tacit coordination, they also teach us something about the psychological processes that underlie this phenomenon.

Mehta et al. (1994) argued that people may use different types of salience to tacitly coordinate their decisions. They distinguished three types of salience. First, people may simply choose the option that is salient for themselves. This type of salience is called *primary salience,* and Mehta et al. argued that for people from the same cultural background, the same labels have primary salience, which may explain why tacit coordination is often successful among people from the same population. Second, people may base their decisions on what they think is salient for the other player(s). This type of salience is called *secondary salience*. And third, people may, by means of so-called rules of selection, try to identify one unique choice option that is salient for all players (cf. Schelling, 1960). This third type of salience is called *Schelling salience.*

Mehta et al. (1994) conducted an experiment to test which of these three types of salience people use in coordination games. They showed that when participants were asked to individually pick an option, they often picked a different option than when they were asked to coordinate their decisions with an anonymous co-player. According to Mehta et al., these findings indicate that people do not use primary salience as a basis for their decisions in coordination games, but instead use secondary or Schelling salience. Unfortunately, however, their experimental design did not allow them to distinguish between secondary and Schelling salience. Therefore, the following question still remained: Do people use secondary or Schelling salience to tacitly coordinate their decisions?

The present research provides a tentative answer to this question, namely that people use Schelling salience to tacitly coordinate their decisions. Our findings suggest that people do not base their decisions on what is salient for themselves (i.e., primary salience) or what is salient for the other player (i.e., secondary salience), but that they take into consideration the characteristics of both players when determining their decisions. After all, we showed that people's choices do not solely depend on the information they have about the other player (e.g., whether he/she is a man or a woman), which would mean that they would apply secondary salience, but more so on whether characteristics are shared or unshared by both of them. This implies that, given the social information that they have about one another, they try to find the choice option that is unambiguously salient for the combination of players. Thus, the present findings indicate that people may indeed use Schelling salience to achieve coordination success.

Diversity and successful mismatching

In the literature on tacit coordination (e.g., Mehta et al., 1994; Schelling, 1960), it has repeatedly been argued that people from the same cultural background may be better at coordinating their decisions because they share the same conventions (cf. Binmore, 1992; Richards, 2001). Whereas one might simply conclude from this that diversity is detrimental to tacit coordination, our current findings suggest that this may not always be the case. After all, the results of Studies 2 and 4 indicate that when mismatching is required, diversity may even be beneficial to tacit coordination. It should be noted, however, that even in mismatching situations, shared knowledge about another's cultural background may be necessary for diversity to facilitate coordination success (cf. Harrison, Price, & Bell, 1998). After all, in order to employ the strategies demonstrated in the present article, the people involved need to know which choice options are associated with which characteristics (e.g., which color is associated with which sex), which may largely differ between cultures. Thus, whereas diversity within cultures (i.e., between two players from the same culture) may facilitate mismatching, diversity between cultures (i.e., between two players from different cultures) may indeed hamper coordination, especially if the people involved have little knowledge about the other's cultural background.

Moreover, these results show how fruitful it is to look not only at matching situations, which have traditionally received a lot of attention in the economic literature, but also to focus on situations in which mismatching is required. We demonstrated that matching and mismatching games, although hardly ever distinguished in the literature, are very different psychologically (see also Abele & Stasser, 2008).

Limitations and suggestions for future research

At this point, it may be important to note that the coordination games studied in the present article, just like other economic games, are simplifications of real-life coordination problems (cf. Schelling, 1960). The games reported here were specifically designed to illustrate our idea that people may use social information to tacitly coordinate their decisions. To investigate this, we provided participants with pieces of information about their coordination partner, thereby testing whether and how they would use the provided information to achieve coordination success. Of course, in the real world, coordination situations can be much more complex than this, and people then have to actively search for useful (social and environmental) information themselves. The question remains as to whether under such circumstances, in which they have to actively search for useful cues, people are still able to select and use those pieces of social information that can facilitate tacit coordination. Therefore, in order to further enhance the generalizability of the present findings, it would be good if future research set out to investigate this issue, for example, by using paradigms in which players have the possibility to actively search for information about their coordination partner.

Concluding remark

The present article is the first to empirically demonstrate that choice behavior in tacit coordination situations is influenced by social information. We have presented converging evidence that people not only focus on environmental characteristics when coordinating their decisions, but also use characteristics of the people they have to coordinate with. By showing this, we have shed some new light on the mystery that, after so many decades, still surrounds the phenomenon of tacit coordination. However, at the same time we realize that, in real-life coordination situations, there may be several other ways in which people may employ social information to tacitly coordinate their decisions. Therefore, it is our hope that the present article will stimulate more research into the social-psychological processes underlying tacit coordination.

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Notes

1 It should be noted that the pattern of choices was (almost) identical for men and women, and participants' gender did not moderate the effect of social information on choices, χ^2 (4, N = 97) = 2.15, p = .71.
2 It should be noted that the pattern of choices was (almost) identical for men and women, and participants' gender did not moderate the effect of social information on choices, χ^2 (4, N = 89) = 5.17, p = .27.
3 It may be argued that the Central University Library is extra salient in this context, because it is not only the most "neutral" location, but also the most "central" one (cf. Schelling, 1960).

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